

6. Archipelago@Crossroads

Indonesia is at a crossroads in the path to becoming an Information Society. Ironically, the socio-economic crisis has created demand for instantaneous access to information, manifested in an explosion of Indonesian web sites. Unprecedented liberalization unleashed by the open political environment has also resulted, whether intentionally or not, in one of the freest Internet markets in Asia. There are no limits on the number of Internet providers nor is content restricted in any way. The country has also made noteworthy strides in public communication access. The successful Wartel model for public telephone centers has been transplanted to Warnets for public Internet access. The Post Office has also been leading a drive for expanded public access. Despite these trends, Internet access at the end of the year 2000 remained very low, at less than one per cent of the population. And even that figure masks a large Digital Divide within the country with the majority of Internet users in the large cities of Jakarta, Bandung and Surabaya.

For the Internet to go further in Indonesia, for it to become rooted and sustainable and for it to permeate all strata of the society, will require government support. Until lately, the government has been distracted by the country's serious economic and political situation. The recent Presidential Decree covering ICT development in the country illustrates government recognition of the growing national Digital Divide and signals its intention to do something about it. It remains to be seen if the intention can be translated into concrete actions and, more importantly, if the financial resources will be available.

The title of this report is '*Kretek Internet.*' The kretek is a uniquely

Indonesian invention and if the Internet is to be widely permeated in the country, it too will have to be Indonesian in content, focus and applications. Refreshingly, the country recognizes its huge domestic potential and is not obsessed, such as many developing countries, with building up a software export industry. Rather it knows that it must build up domestic applications and usage. If this can be done, then an Indonesian Internet will take root. If this can happen in one of the world's largest developing countries, then it could serve as a relevant model for many other developing nations.

6.1 Recommendations

Presidential Decree No. 6 issued in April 2001 addresses in general terms many of the areas affecting Indonesia's ICT development. It lacks specificity about concrete steps to be taken. While the Action Plan attached to the Decree outlines actual programmes, these will take some time to be implemented and they do not go into a great deal of detail. The recommendations below outline short-term measures without major resource implications that would help enhance ICT diffusion in the country.

- **Level playing field.** There is an obvious conflict of interest when the incumbent local telephone monopoly, Telkom, also provides Internet access. A number of ISPs have complained about problems obtaining high-speed lines from Telkom. Whether this problem is an infrastructure constraint or whether Telkom is exploiting its competitive advantage, the remedy is the same: opening up the market for the provision of domestic infrastructure. Although there are plans to open the market soon—and indeed Telkom and

Indosat will already be competing in some areas—it will take a while before true competition materializes. In the meantime, it might be useful to allow ISPs to provide their own infrastructure when needed. Alternatively, the regulator could review the terms and conditions of Telkom's leased line offerings to ISPs to try to ensure a level playing field.

- **Local applications.** The majority of Indonesian Internet use constitutes e-mail or information searching. There is not generally a lack of local content as there are a growing number of web sites in the Indonesian language. What is lacking are local applications that would generate more demand for Internet access and really help it take root in the country. There are a number of areas where application development could yield gains. One is the development of applications for rural communities. This includes the creation of agricultural portals that provide pricing information, weather forecasts, transport schedules, farming techniques and other related information. In addition to Indonesian, these applications should be developed in languages that are used in the rural areas. Programmers should work closely with the local community to find out what kind of information they need. This could be in the form of a sort of Indonesian 'Digital Scout' programme where ICT-skilled youth go to rural areas to work with local communities to develop applications and train local users. While traditional web access via a PC will be important, other innovative ways of disseminating information may be appropriate. This can include relaying information downloaded from the web via photocopies or broadcasting over a local loudspeaker system or local radio. Another technique is to use audio and video streaming to

create and disseminate information, particularly for illiterate users.

Another area that could drive Internet awareness and usage is the development of a few 'killer' applications. These could apply to government-related services that are widely used. One example would be the local identity card that is required of every adult and typically time consuming to obtain. Allowing citizens to complete the application for the identity card online would save time, make the process more transparent and just might be the sort of thing that drives people to the Internet. Arrangements could be made with Wartels to assist users in completing the form, take and upload digital photos and distribute the completed identification card when it is ready.

Parallel to this effort, the government might want to designate a number of 'flagship' applications and provide support for the local Research and Development community to build them. This could include help for special software centers.

The development of dot-com companies should also be facilitated. This could include tax breaks and other incentives for content creators. Dot-com incubators could also be explored, perhaps as part of the development of software development parks. Partnerships with Singapore, Brunei and Malaysia where the Malay language is used and closely related to Indonesian, could be explored as these countries could provide expertise and resources.

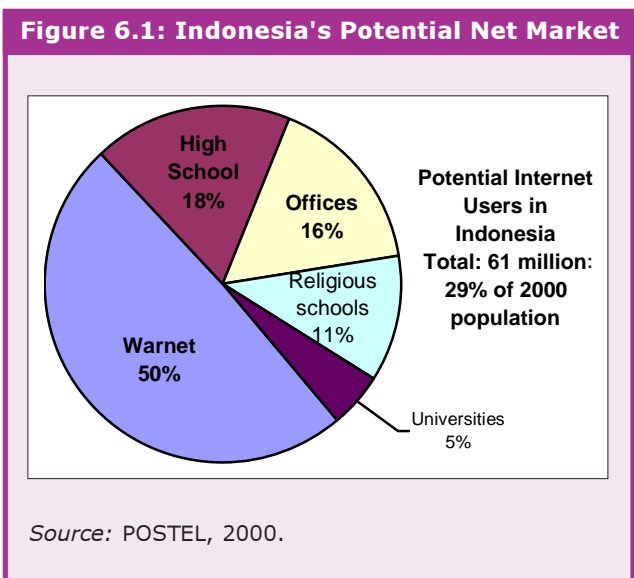
- **Flexible pricing.** Indonesian Internet prices are relatively high compared to other South East Asian nations. This is exasperated by the lower incomes in Indonesia, which

makes access expensive. The price of 30 hours of Internet access in Indonesia is more than twice the average monthly per capita expenditure. If Internet use is to increase, then the price of access must be reduced. One component of the dial-up Internet charge is the telephone tariff. According to one Indonesian Internet expert, if telephone tariffs were lowered, the number of Internet subscribers could reach 20 million in the country.²⁶ It is recommended that telephone usage charges for dial-up Internet access be waived or reduced. Another idea is to share the telephone usage charge between ISPs and Telkom. This would allow ISPs to provide 'free' Internet access. The example of LinkNet's free ISP plan is pertinent here. In less than one year, LinkNet acquired almost 200'000 subscribers, making it the largest ISP in the country. However this model provides unsustainable since Telkom would not share the telephone charge.

- Universal access.** The majority of Indonesians cannot afford individual Internet access. Additionally, roughly 90 per cent of homes do not have telephone lines let alone computers. Thus if the Internet is to become widespread in the country, it will have to be through public locations. Indeed, statistics indicate that the majority of Indonesians already access the Internet from public locations such as Warnets. This has happened despite few government policies for supporting public Internet

access. The potential for expanding Internet access through public locations such as schools or Warnets is immense. According to Postel, the potential size of the Internet market in Indonesia is over 60 million users (i.e., 30 per cent of the population), some 30 times higher than it is today. Most of these new users would access the Internet from schools and Warnets if the facilities were available. As a first step, the same agreement that allows Wartels to purchase wholesale airtime from Telkom should be extended to the Warnets. This will allow them to reduce their costs and make service even more affordable. Other incentives such as tax breaks should be provided to Warnets that locate in rural or underserved areas. The government should also deploy some of its education budget for the purchase of ICT equipment and Internet access. In addition, it should devise a universal access policy that includes discounted Internet access to schools.

- Foreign investment.** The government will be hard pressed to both provide adequate social services as well as provide the



needed expenditures to promote ICT development. One important source of funding could be international investors that are attracted by Indonesia's large market source and potential. There is legitimate concern that opening markets too quickly might affect weaker domestic companies. However the government must resist the temptation to champion local companies over foreign ones in order to attract badly needed investment. It must explore ways to attract investment while ensuring widespread access.

- **Market research.** There is a serious shortage of ICT market information for Indonesia. This ranges from reliable surveys on the number of Internet users to the current ICT workforce. The national statistical agency (BPS) does not collect ICT indicators nor does the government agency responsible for telecommunications, Postel. Although some market research firms occasionally compile ICT-related data for the country, these are scarce or costly to obtain. Therefore information

about a number of important indicators such as users, user profiles or web sites visited are based on irregular media reports that are typically limited in coverage or of questionable methodology. Thus far, the limited number of operators in the telecommunication sector has facilitated the aggregation of national statistics. However this will change as new operators enter the market. It is recommended that BPS and Postel jointly develop an online ICT statistical system. This would include collection of key market indicators from telecommunication operators and ISPs and aggregation at a country and provincial level. It is also recommended that BPS include a number of questions about ICT equipment ownership in household surveys. It is further recommended that the government sponsor ongoing surveys to obtain ICT-related information about key sectors of the economy such as the value of e-commerce, ICT human resource situation and requirements, ICT usage in the educational sector, etc.

²⁶ "ISPs Show Promising Future, As Subscriber Numbers Increase." Detikworld. 19 April 2001. <http://www.detikworld.com/inet/2001/04/19/2001419-180116.shtml>.

Annex 1: State of the Internet in Indonesia

The Mosaic Group <www.agsd.com/gdi97/gdi97.htm>, has developed a framework for characterizing the state of the Internet in a nation. They consider six dimensions, each of which has five ordinal values ranging from zero (non-existent) to four (highly developed). The dimensions are as follow:

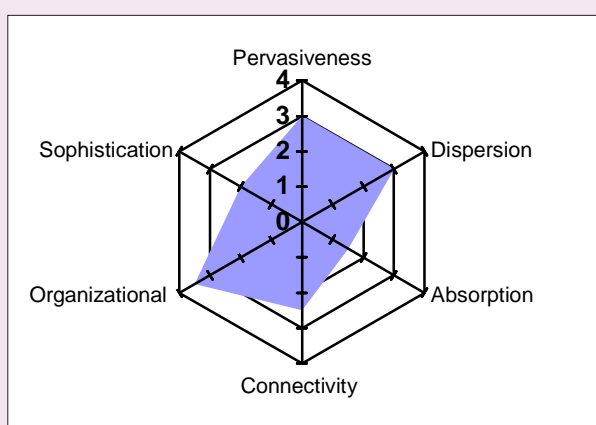
- **pervasiveness**: a measure based on users per capita and the degree to which non-technicians are using the Internet.
- **geographic dispersion**: a measure of the concentration of the Internet within a nation, from none or a single city to nationwide availability.
- **sector absorption**: a measure of the degree of utilization of the Internet in the education, commercial, health care and public sectors.
- **connectivity infrastructure**: a measure based on international and intranational backbone bandwidth, exchange points, and last-mile access methods.
- **organizational infrastructure**: a measure based on the state of the ISP industry and market conditions.
- **sophistication of use**: a measure characterizing usage from conventional to highly sophisticated and driving innovation.

Indonesian values for these dimensions are in Figure 1.1.

Pervasiveness is rated at level 3, *Common*. At December 2000, there were approximately 400'000 Internet subscribers in the country translating to an estimated two million users, or 0.95 per cent of the population.

Figure 1.1: State of the Internet in Indonesia

Dimension	Value
Pervasiveness	3
Geographic Dispersion	3
Sectoral Absorption	1.5
Connectivity Infrastructure	2.5
Organizational Infrastructure	3.5
Sophistication of Use	2
TOTAL	15.5



Note: The higher the value, the better. 0 = lowest, 4 = highest.
Source: ITU adapted from Mosaic Group methodology.

Geographic Dispersion is rated at level 3, at *Highly dispersed*. Internet access is available from all provincial capitals. Nationwide dial-up access is available via a four-digit telephone number at a standard tariff of Rp 160 per minute (0.92 US cents per hour).¹ The main constraint to nationwide connectivity is local access since most households do not have a telephone, let alone a personal computer.

Sector Absorption is rated at level 1.5, between *Rare* and *Moderate*. This ranking is a function of the type of connectivity in education, government, health care and business. There is a good degree of connectivity at the university level. Connectivity at the primary and secondary level is less profuse. Less than 2'000 out of 13'000 secondary schools are connected and very few primary schools have an Internet connection. A number of government ministries are on the web although there is no central portal. Few provincial governments have a web site. The Ministry of Health has its own web site and an Intranet with about 80 users. Around 20 of some 400 government hospitals have a web page. Large businesses have web sites but few Small and Medium Enterprises (SMEs) do.

The **Connectivity Infrastructure** is at level 2.5, between *Expanded* and *Broad*. International connectivity of the three largest ISPs is over 146 Mbps; other ISPs have varying

levels of international connectivity. The main domestic operator has a nationwide fibre/microwave/satellite backbone that operates at various speeds. There is a domestic traffic exchange with two connection points. In addition, the larger ISPs also peer amongst themselves. High-speed local access is growing with leased line being the main access methods. ADSL is being tested and access via cable modem access has several thousand users. High-speed satellite connections are also being used.

The **Organizational Infrastructure** is at level 3.5, between *Competitive* and *Robust*. There were around 60 operational ISPs at the end of 2000. There is no limit on the number of licenses that can be granted to provide Internet access service (around 150 have been issued). There is an ISP association that runs a public traffic exchange. However the market is dominated by a few ISPs including the main telecom operators. Most ISPs are not allowed to provide their own national infrastructure and must lease from telecom operators. There have been allegations from some ISPs that the largest telecom operator has an advantage since it dictates the availability and conditions of leased lines.

Sophistication of Use is at level 2, *Conventional*. The most popular applications among most users appear to be e-mail and information retrieval.

¹ Using a conversion rate of Rp 10' 785 to US\$ 1 at 20 April 2001.

Annex 2: Telecommunication statistics

Area: 1'919'443 km2

INDONESIA
National currency: Rupiah

		Year Ending 31.12								
		Unit	1991	1995	1996	1997	1998	1999	2000	30.09 2001
DEMOGRAPHY, ECONOMY										
Population	1	10x3	181'064	195'283	198'320	201'353	204'393	206'517	212'092	
Households	2	10x3	40'851	45'653	47'195	48'281	49'383	51'204	48'300	
Gross Domestic Product	3	10x9	249'969	454'514	532'568	627'695	955'753	1'109'980	1'290'680	
Gross Fixed Capital Formation	3	10x9	70'200	129'218	157'653	177'686	243'043	240'322	313'915	
Average annual exchange rate per	3		1'950	2'249	2'342	2'909	10'014	7'855	8'422	
Consumer price index (1995=100)	3		71	100	108	115	182	219	227	
Telecom equipment exports (US\$)	4	10x6	...	86	262	200	383	284	298	
Telecom equipment imports (US\$)	4	10x6	312	690	1'230	1'397	424	135	149	
TELEPHONE NETWORK										
Main telephone lines		10x3	1'295	3'291	4'186	4'983	5'572	6'080	6'663	7'101
Main telephone lines per 100			0.72	1.69	2.11	2.47	2.70	2.91	3.14	
Residential main lines per 100 homes			1.6	5.5	7.2	8.6	9.2	10.5	11.3	
Digital main lines		%	55	93	96	99	99	100	100	100
Public payphones		10x3	25	108	135	167	217	269	345	375
MOBILE SERVICES										
Cellular mobile telephone subscribers		10x3	25	211	563	916	1'066	2'221	3'669	5'303
- Digital cellular subscribers		10x3	—	120	419	780	941	2'124	3'510	
Cellular subscribers per 100			0.01	0.11	0.28	0.45	0.52	1.06	1.73	
TELEPHONE TRAFFIC										
International outgoing (minutes)		10x6	100	206	262	290	310	251	251	
International incoming (minutes)		10x6	138	260	345	408	408	403	346	
Total international (minutes)		10x6	238	465	607	698	718	654	596	
National (pulses)	5	10x6	10'451	28'256	35'347	42'143	45'905	47'259	52'859	58'665
STAFF										
Full-time telecommunication staff	6		41'134	39'839	40'009	40'309	40'468	40'317	39'908	
QUALITY OF SERVICE										
Faults per 100 main lines per year	7		65.8	19.7	18.6	13.7	13.2	7.4	16.0	
TARIFFS										
Residential telephone connection	8		300'000	700'000	700'000	590'000	295'000	295'000	295'000	
Business telephone connection	8		300'000	900'000	900'000	800'000	450'000	450'000	450'000	
Residential telephone monthly fee	8		7'500	20'500	20'500	20'500	22'700	22'900	22'900	
Business telephone monthly fee	8		7'500	31'000	31'000	35'800	34'900	39'100	39'100	
3-minute local telephone call (peak)			100	110	110	114	144	168	168	
Cellular connection	8		...	300'000	300'000	300'000	200'000	200'000	200'000	
Cellular monthly	8		...	58'000	58'000	58'000	65'000	65'000	65'000	
3-minute local cellular call (peak)	8		...	825	825	810	975	975	975	
REVENUE										
Total telecom services		10x9	2'379	6'150	6'907	8'222	10'911	14'729	19'126	
- Telephone service		10x9	1'947	5'153	5'358	6'141	7'160	8'522	9'791	
- Mobile communication		10x9	...	208	608	858	2'203	4'200	6'900	
CAPITAL EXPENDITURE										
Annual telecom investment	9	10x9	1'009	3'712	4'909	4'368	4'892	2'072	2'253	
BROADCASTING										
Television sets	10	10x3	13'000	22'000	25'000	27'000	28'000	30'000	31'700	
Home satellite antennas	10	10x3	...	2'000	3'000	3'300	3'500	3'700	3'900	
INFORMATION TECHNOLOGY										
Personal computers	11	10x3	260	980	1'300	1'600	1'700	1'900	2'100	
Internet hosts	12	10x3	—	2	10	10	15	21	27	
Internet users	13	10x3	...	50	100	250	500	900	2'000	

(1) Source: UN (1991, 2000); 1995-1999: BPS. 1999 excluding East Timor. (2) 1995:1999 BPS. Other years: ITU estimate. 1999 excluding East Timor. (3) Source: IMF. (4) UN. From 1998, unofficial estimates, source US Department of Commerce. (5) Excluding payphones and mobile cellular phones. (6) Telkom and Indosat. (7) Yearly estimate from monthly data. (8) Maximum tariffs not including taxes. (9) Telkom and Indosat. (10) ITU estimates. (11) Source: Computer Industry Almanac, ITU estimates. (12) Source: Internet Software Consortium. (13) APJII.

Annex 3: Schedule of meetings

Date	Time	Person
Monday, 30 April 2001	10:00	Mr. Pandji Chesin, APJII Mr. Gandung Murdani, PT. Indosat Mr. Agus Abdillah, PT. Telkom
Monday, 30 April 2001	13:00	Mr. Otto Murdianto, Pos Indonesia (WASANTARANET)
Tuesday, 1 May 2001	10:00	Dr. Imron Bulkin, BAPPENAS Dr. Zainal Hasibuan, Universitas Indonesia KADITBINTEL DAN INFORMATIKA Suryatin Setiawan, KaDiv. RISTI - PT. TELKOM
Tuesday, 1 May 2001	13:00	Mr. Aizirman Djukan - TKTI Mas Wigrantoro, Mastel Mr. Rudiantara, Excelcomindo / Mastel Mr. Arifudin, Mastel Sdr. Kepala Biro Pusat Statistik (BPS) Sri Yanto - APWI Rudi Rusdiah, AWARI Mr. William Yin, Lyman Mr. Wendra Natasendjaja, Lyman
Wednesday, 2 May 2001	09:00	Dani Sumarsono, CBN
Wednesday 2 May 2001	10:00	Mr. Mujiono, Kapusdatin Depdagri Mr. Marsetiawan, Depdagri Mr. Sudung Nainggolan, DepKes Mr. Hari Purwanto, DepKes Ms. Lolly Amalia, IPTEKNET
Wednesday 2 May 2001	13:00	Mr. I Putu Suryawirawan, DITJEN ILMEA Mr. Insan Prakasa, PT EDI Mr. Safar Idham, PT. Sucofindo
Thursday 3 May 2001	10:00	Mr. Sunarya Ruslan, Directorate General Radio, TV & Film Mr. Handoko Tanuadji, KabelVision Mr. Hillman Sulaiman, Indonesian Chamber of Commerce Mr. Gunadi, Postel
Friday 4 May 2001	10:00	Mr. Noor Iza, Postel Mr. Azhar Hasyim, Postel

Annex 4: Abbreviations and Acronyms

ADSL	Asymmetrical Digital Subscriber Line
APJII	Indonesian ISP Association
AWARI	Indonesian Internet Kiosk Association
B2C	Business to Consumer
BAPPENAS	National Development Planning Agency
BPS	National Statistical Office
GoI	Government of Indonesia
GPRS	General Packet Radio Services
ICT	Information and Communication Technology
IMF	International Monetary Fund
ISP	Internet Service Provider
IT	Information Technology
KSO	Kerjasama Operasi (Joint operating scheme)
LoI	Letter of Intent
MITI	Ministry of Industry and Trade
PC	Personal Computer
PCS	Personal Communication Systems
PoP	Point of Presence
Rp	Indonesian Rupiah, the national currency. At June 30 2001, the rate was Rp 11'400 to US\$ 1. Note that the Rupiah has been subject to wide variation and US\$ figures in this report should be treated with caution.
SME	Small and Medium Enterprises
TKTI	Indonesia Coordinating Team on ICT
UT	Universitas Terbuka

Annex 5: Useful web sites

Government	
Postel (Telecom regulator)	www.postel.go.id
BAPPENAS (National Planning Agency)	www.bappenas.go.id
BPS (Central Bureau of Statistics)	www.bps.go.id
Main telecom operators	
Indosat	www.indosat.com
Satelindo	www.satelindo.co.id
Telkom	www.telkom.co.id
Leading ISPs	
CBN	www.cbn.net.id
IndosatNet	www.indosat.net.id
LinkNet	www1.link.net.id
TelkomNet	www.telkom.net.id
ICT industry associations	
APJII (Indonesian ISP Association)	www.apjii.or.id
Mastel (Indonesian Infocomm Society)	www.mastel.or.id
Media	
Kabelvision	www.kabelvision.com
Detikom	www.detik.com
Kompas	www.kompas.co.id
Tempo	www.tempo.co.id
The Jakarta Post	www.thejakartapost.com

Annex 6: Bibliography

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